

CLAIMS

1. An electromechanical signal selection device comprising:
a micro-vibrator which can be excited by an input signal;

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a post for retaining the micro-vibrator,
wherein the micro-vibrator can generate a change in
physical property due to excitation so as to change a selected
signal.

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2. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator comprises a material
whose physical property is changed in accordance with a
structural change.

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3. The electromechanical signal selection device according
to claim 1 or 2, wherein the physical property is an electric
conduction characteristic.

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4. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator is retained by an
electrode placed on the post.

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5. The electromechanical signal selection device according
to claim 4, wherein a bonded surface between the electrode and

the micro-vibrator is located at a distance from the post.

6. The electromechanical signal selection device according
to claim 1, wherein the post comprises a structure having lower
5 rigidity than that of the micro-vibrator.

7. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator comprises a multilayer
structure of at least two layers including a material layer
10 generating the change in physical property and a conductor layer.

8. The electromechanical signal selection device according
to claim 7,

wherein the conductor is formed to be linear, and
15 wherein the material layer generating the change in
physical property is formed around the linear conductor layer.

9. The electromechanical signal selection device according
to claim 7, wherein the material layer generating the change
20 in physical property is formed on the side where an electric
field of a signal is concentrated.

10. The electromechanical signal selection device according
to claim 9, wherein the material layer generating the change
25 in physical property is formed under the substrate side of the

conductor layer.

11. The electromechanical signal selection device according
to claim 7, wherein half the radius of the conductor is not
5 larger than skin depth of a high frequency signal.

12. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator comprises perovskite
type transition metal oxide.

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13. The electromechanical signal selection device according
to claim 12, wherein the perovskite type transition metal oxide
is PrNiO_3 showing metal-insulator transition.

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14. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator comprises a
piezoresistive effect material.

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15. The electromechanical signal selection device according
to claim 14, wherein the micro-vibrator comprises at least one
of Si , $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ and BaTiO_3 .

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16. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator comprises a
superconductor.

17. The electromechanical signal selection device according
to claim 16, wherein the superconductor is one of Al, Pb,
 $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ and $(\text{BEDTTTF})_2\text{I}_3$.

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18. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator comprises a carbon-based
material.

10 19. The electromechanical signal selection device according
to claim 1, wherein the input signal is supplied through an
electrode provided in the micro-vibrator.

15 20. The electromechanical signal selection device according
to claim 1, wherein the input signal is supplied through a driving
electrode disposed adjacently to the micro-vibrator.

20 21. The electromechanical signal selection device according
to claim 1, wherein an external force to be applied to the driving
electrode is an electrostatic force.

22. The electromechanical signal selection device according
to claim 1, wherein a mechanism for applying an external magnetic
field to the micro-vibrator is provided to excite the
25 micro-vibrator due to a Lorentz force.

23. The electromechanical signal selection device according
to claim 1, wherein a mechanism for applying an external magnetic
field is provided in a driving electrode or a signal input
5 electrode disposed adjacently to the micro-vibrator so as to
excite vibration of the micro-vibrator in a desired direction.

24. The electromechanical signal selection device according
to claim 1, wherein the change in physical property is caused
10 by piezoelectric effect.

25. The electromechanical signal selection device according
to claim 24, wherein the micro-vibrator is designed to generate
a signal by virtue of the piezoelectric effect when the
15 micro-vibrator is excited to produce a structural change.

26. The electromechanical signal selection device according
to claim 1, wherein the micro-vibrator comprises ceramics.

20 27. The electromechanical signal selection device according
to claim 26, wherein the micro-vibrator comprises PZT.